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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,597	10/20/2003	Julie Chen	SVL920030090US1	2544

26381 7590 04/07/2006

LACASSE & ASSOCIATES, LLC
1725 DUKE STREET
SUITE 650
ALEXANDRIA, VA 22314

EXAMINER

SOMMERFELD, PAUL J

ART UNIT	PAPER NUMBER
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2168

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/687,597	CHEN ET AL.	
	Examiner	Art Unit	
	Paul J. Sommerfeld	2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>03092004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 13 is objected to because it is a substantial duplicate of claim 11.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, 4, 14, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall et al (U.S. Publication 2003/0135478 A1) in view of Klein et al (U.S. Patent Number 6,728,790 B1).

As to claim 1, Marshall et al teaches a method for reorganizing a table space in a database (see Abstract) comprising the steps of:

(b) concurrently creating a shadow data set for each of said LOB table spaces and a shadow data set for said table space and associated indexes (lines 5-7 of

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paragraph [0011]. Since the shadow data sets exist, the creation of the data sets is inherent);

(c) loading rows into shadow data sets, and for each row loaded, reading LOBs from each of LOB table spaces relating to a loaded row and writing said read LOB to a corresponding shadow data set (lines 5-7 of paragraph [0011]); and

(d) switching original data set with shadow data sets (lines 10-12 of paragraph [0011]).

Marshall et al does not explicitly teach (a) identifying LOB table spaces that are related to said table space being reorganized.

Klein et al teaches (a) identifying LOB table spaces that are related to said table space being reorganized (col. 2 line 64 through col. 3 line 3. An index is built on LOBs belonging to a column of a table. Since the index contains pointers to LOB data associated with the LOBs, identifying LOB table spaces related to the table is inherent.)

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have modified the method of reorganizing a database taught by Marshall et al by the method of accessing LOBs taught by Klein et al, because identifying table spaces related to a table being organized provides a mechanism to efficiently access LOBs (Klein et al col. 2 lines 31-33).

As to claim 3, Marshall et al, as modified by Klein et al, teaches said method is implemented across networks (Marshall et al lines 1-8 of paragraph [0034]).

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As to claim 4, Marshall et al, as modified by Klein et al, teaches said across network element is any of the following: local area network (LAN), wide area network (WAN), or the Internet (Marshall et al lines 1-8 of paragraph [0034]).

As to claim 14, Marshall et al, as modified by Klein et al, teaches an article of manufacture comprising a computer usable medium having computer readable program code embodied therein which implements a method for reorganizing a table space in a database (Marshall et al lines 1-7 of paragraph [0013]), said medium comprising:

(a) computer readable program code identifying LOB table spaces that are related to said table space being reorganized (Klein et al col. 2 line 64 through col. 3 line 3. An index is built on LOBs belonging to a column of a table. Since the index contains pointers to LOB data associated with the LOBs, identifying LOB table spaces related to the table is inherent.);

(b) computer readable program code concurrently creating a shadow data set for each of said LOB table spaces and a shadow data set for said table space and associated indexes (Marshall et al lines 5-7 of paragraph [0011]. Since the shadow data sets exist, the creation of the data sets is inherent);

(c) computer readable program code loading rows into shadow data sets, and for each row loaded, computer readable program code reading LOBs from each of LOB table spaces relating to a loaded row and computer readable program code writing said read LOB to a corresponding shadow data set (Marshall et al lines 5-7 of paragraph [0011]); and

(d) computer readable program code switching original data set with shadow data sets (Marshall et al lines 10-12 of paragraph [0011]).

As to claim 18, Marshall et al, as modified by Klein et al, teaches a system to reorganize a table space in a database (see Abstract) comprising:

(a) an identifier to identify LOB table spaces that are related to said table space being reorganized (Klein et al col. 3 lines 2-3);

(b) a shadow data set creator to concurrently create a shadow data set for each of said LOB table spaces and a shadow data set for said table space and associated indexes (Marshall et al lines 5-7 of paragraph [0011]. Since the shadow data sets exist, the creation of the data sets is inherent);

(c) a shadow data set loader to load rows into shadow data sets, and for each row loaded, reading LOBs from each of LOB table spaces relating to a loaded row and writing said read LOB to a corresponding shadow data set (Marshall et al lines 5-7 of paragraph [0011]); and

(d) a data switcher to switch original data set with shadow data sets (Marshall et al lines 10-12 of paragraph [0011]).

As to claim 19, Marshall et al, as modified by Klein et al, teaches said system is implemented across networks (Marshall et al lines 1-8 of paragraph [0034]).

As to claim 20, Marshall et al, as modified by Klein et al, teaches said across network element is any of the following: local area network (LAN), wide area network (WAN), or the Internet (Marshall et al lines 1-8 of paragraph [0034]).

4. Claims 2 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall et al (U.S. Publication 2003/0135478 A1), Klein et al (U.S. Patent Number 6,728,790 B1), and further in view of Pereira (U.S. Patent Number 6,122,640).

As to claim 2, Marshall et al, as modified by Klein et al, does not explicitly teach prior to step (a), blocking write access to data being reorganized; and subsequent to step (d), allowing write operations related to data being organized to proceed.

Pereira teaches prior to step (a), blocking write access to data being reorganized (col. 4 lines 1-2. Preventing transactions on the table inherently prevents write transactions.); and

subsequent to step (d), allowing write operations related to data being organized to proceed (col. 4 line 4, where unlocking allows write operations on the table to proceed).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have modified the method of reorganizing a database taught by Marshall et al and Klein et al by the method of locking and unlocking a table taught by

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Pereira et al, because preventing writes to a table being reorganized by locking the table enables a copy of the table to be created (Pereira col. 8 lines 36-39).

As to claim 15, Marshall et al, as modified by Klein et al and Pereira, teaches computer readable program code blocking write access to data being reorganized (Pereira col. 4 lines 1-2. Preventing transactions on the table inherently prevents write transactions.); and

computer readable program code allowing write operations related to data being organized to proceed (Pereira col. 4 line 4, where unlocking allows write operations on the table to proceed).

5. Claims 5, 8, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall et al (U.S. Publication 2003/0135478 A1), Klein et al (U.S. Patent Number 6,728,790 B1) and further in view of Parker (U.S. Patent Number 6,457,014 B1).

As to claim 5, Marshall et al teaches a method for concurrently reorganizing logically related LOB table spaces in a database (see Abstract) comprising the steps of:

(b) switching original data set with said shadow sets including LOB shadows (lines 10-12 of paragraph [0011]. The Examiner assumes "LOB shadows" are LOB data stored in the shadow data sets.).

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Marshall et al does not explicitly teach (i) for each row, identifying columns representing LOB data; and

(ii) for each column in said LOB data, using a rowid of current row to read said LOB data from its associated LOB table space and write said LOB data to the corresponding shadow data set;

Klein et al teaches (i) for each row, identifying columns representing LOB data (col. 2 line 64 through col. 3 line 3); and

(ii) for each column in said LOB data, using a rowid of current row to read said LOB data from its associated LOB table space (col. 7 lines 15-17 and 50-52. The in-memory locator, which contains the rowid of the LOB, is used to access a LOB.) and write said LOB data to the corresponding shadow data set (col. 12 lines 14-16);

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have modified the method of reorganizing a database taught by Marshall et al by the method of accessing LOBs taught by Klein et al, because identifying table spaces related to a table being organized provides a mechanism to efficiently access LOBs (Klein et al col. 2 lines 31-33).

Marshall et al, as modified by Klein et al, still does not teach (a) loading rows into allocated shadow data sets and extracting index keys for each loaded row, said data sets allocated for each table space and associated indexes.

Parker teaches (a) loading rows into allocated shadow data sets and extracting index keys for each loaded row, said data sets allocated for each table space and associated indexes (col. 5 lines 32-34).

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Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have modified Marshall et al, as modified by Klein et al, because having method for reorganizing a database that extracts index keys enables indexes to be built (Parker col. 6 lines 12-13).

As to claim 8, Marshall et al, as modified by Klein et al and Parker, teaches said method is implemented across networks (Marshall et al lines 1-8 of paragraph [0034]).

As to claim 9, Marshall et al, as modified by Klein et al and Parker, teaches said across network element is any of the following: local area network (LAN), wide area network (WAN), or the Internet (Marshall et al lines 1-8 of paragraph [0034]).

As to claim 10, Marshall et al, as modified by Klein et al and Parker, teaches an article of manufacture comprising a computer usable medium having computer readable program code embodied therein which implements a method for concurrently reorganizing logically related LOB table spaces in a database (Marshall et al lines 1-7 of paragraph [0013]), said medium comprising:

(a) computer readable program code loading rows into allocated shadow data sets and extracting index keys or each loaded row, said data sets allocated for each table space and associated indexes (Parker col. 5 lines 32-34), and

(i) for each row, computer readable program code identifying columns representing LOB data (Klein et al col. 2 line 64 through col. 3 line 3); and

(ii) for each column in said LOB data, computer readable program code using a rowid of current row to read said LOB data from its associated LOB table space (Klein et al col. 7 lines 15-17 and 50-52). The in-memory locator, which contains the rowid of the LOB, is used to access a LOB.) and write said LOB data to the corresponding shadow data set (Klein et al col. 12 lines 14-16);
(b) computer readable program code switching said original data set with said shadow sets including LOB shadows (Marshall et al lines 10-12 of paragraph [0011]).

6. Claims 6, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall et al (U.S. Publication 2003/0135478 A1), Klein et al (U.S. Patent Number 6,728,790 B1), Parker (U.S. Patent Number 6,457,014 B1), and further in view of Pereira (U.S. Patent Number 6,122,640).

As to claim 6, Marshall et al, as modified by Klein et al and Parker, does not explicitly teach prior to step (a), blocking write access to data being reorganized; and subsequent to step (b), allowing write operations related to data being organized to proceed.

Pereira teaches prior to step (a), blocking write access to data being reorganized (col. 4 lines 1-2. Preventing transactions on the table inherently prevents write transactions.); and

subsequent to step (b), allowing write operations related to data being organized to proceed (col. 4 line 4, where unlocking allows write operations on the table to proceed).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have modified Marshall et al, as modified by Klein et al, by the method of locking and unlocking a table taught by Pereira et al, because preventing writes to a table being reorganized by locking the table enables a copy of the table to be created (Pereira col. 8 lines 36-39).

As to claim 11, Marshall et al, as modified by Klein et al, Parker, and Pereira, teaches computer readable program code blocking write access to data being reorganized (Pereira col. 4 lines 1-2. Preventing transactions on the table inherently prevents transactions that write.); and

computer readable program code allowing write operations related to data being organized to proceed (Pereira col. 4 line 4, where unlocking allows write operations on the table to proceed).

As to claim 13, Applicant is directed to the remarks and discussion made regarding claim 11 above.

7. Claims 7, 12, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall et al (U.S. Publication 2003/0135478 A1), Klein et al (U.S. Patent Number

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6,728,790 B1), Parker (U.S. Patent Number 6,457,014 B1) and further in view of Hintz et al (U.S. Patent Number 6,163,783).

As to claim 7, Marshall et al, as modified by Klein et al and Parker, does not explicitly teach prior to step (a), unloading rows from original table spaces; and sorting unloaded rows,

whereby said step of loading rows into shadow data sets involves loading said sorted rows.

Hintz et al teaches prior to step (a), unloading rows from original table spaces; and sorting unloaded rows (col. 3 lines 14-24),

whereby said step of loading rows into shadow data sets involves loading said sorted rows (col. 3 lines 14-24).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have modified Marshall et al, as modified by Klein et al and Parker, by Hintz et al, because sorting rows of data produces sorted output which can be examined to diagnose potential problems with referential integrity (Hintz et al col. 3 lines 24-26).

As to claim 12, Marshall et al, as modified by Klein et al, Parker, and Hintz et al, teaches computer readable program code unloading rows from original table spaces (Hintz et al col. 3 lines 14-17); and

computer readable program code sorting unloaded rows (Hintz et al col. 3 lines 22-23),

whereby said computer readable program code for loading rows into shadow data sets loads said sorted rows (Marshall et al lines 5-7).

As to claim 16, Marshall et al, as modified by Klein et al and Parker and Hintz et al, teaches a method for concurrently reorganizing logically related LOB table spaces in a database comprising the steps of:

(a) identifying LOB table spaces logically related to a table being reorganized (Klein et al col. 2 line 64 through col. 3 line 3) and allocating shadow data sets for each table space and associated indexes (Marshall et al lines 5-7);

(b) unloading rows from original table spaces (Hintz et al col. 3 lines 14-17);

(c) sorting said unloaded rows (Hintz et al col. 3 lines 22-23);

(d) loading rows into said allocated shadow data sets and extracting index keys for each row as it is loaded (Parker col. 5 lines 32-34), and

(i) for each row, identifying columns representing LOB data (Klein et al col. 2 line 64 through col. 3 line 3);

(ii) for each column in said LOB data, using a rowid of current row to read the LOB from its associated LOB table space (Klein et al col. 7 lines 15-17 and 50-52) and write said LOB data to the corresponding shadow data set (Klein et al col. 12 lines 14-16);

(e) sorting said index keys (Parker col. 5 lines 63-64);

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(f) building the indexes from said sorted index keys (Parker col. 6 lines 12-13);
and

(g) switching said original data set with said shadow sets including LOB shadows
(Marshall et al lines 10-12 of paragraph [0011]).

8. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall et al (U.S. Publication 2003/0135478 A1), Klein et al (U.S. Patent Number 6,728,790 B1), Parker (U.S. Patent Number 6,457,014 B1), Pereira (U.S. Patent Number 6,122,640), and further in view of Hintz et al (U.S. Patent Number 6,163,783).

As to claim 17, Marshall et al, as modified by Klein et al, Hintz et al, and Parker does not explicitly teach prior to step (b), blocking write access to data being reorganize; and

subsequent to step (g), allowing write operations related to data being organized to proceed.

Pereira teaches prior to step (b), blocking write access to data being reorganized (col. 4 lines 1-2. Preventing transactions on the table inherently prevents write transactions.); and

subsequent to step (g), allowing write operations related to data being organized to proceed (col. 4 line 4, where unlocking allows write operations on the table to proceed).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have modified the method of reorganizing a database taught by Marshall et al, as modified by Klein et al, Hintz et al, Parker, and Hintz et al, because preventing writes to a table being reorganized by locking the table enables a copy of the table to be created (Pereira col. 8 lines 36-39).

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
 - U.S. Patent Number 5,887,274, issued to Barry et al, for teaching a method for reorganizing a DB2 tablespace.
 - U.S. Patent Number 5,991,761, issued to Mahoney et al, for teaching a method of reorganizing a data entry database.
 - U.S. Publication 2004/0215632 A1, issued to Isip et al, for teaching a method and system for organizing a tablespace in a database.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul J. Sommerfeld whose telephone number is 571 272-6545. The examiner can normally be reached on M-F 7:45 am - 4:15pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim T. Vo can be reached on 571 272-3642. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Tim Vo', is positioned above the printed name and title.

TIM VO
PRIMARY EXAMINER